ORIGINAL ARTICLE

# Partial cystectomy and omentoplasty for liver hydatid cyst

Ainul Hadi, Syed Nadeem Ali Shah, Saadia Muhammad, Farrukh Ozair Shah

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**Abstract**

**Objective: To evaluate the results of partial cystectomy and omentoplasty in the management of hepatic hydatid disease over a period of four years.**

**Study Design: Prospective study**

**Material and Methods: This was a study of 35 patients with hepatic hydatid cyst who underwent partial cystectomy and omentoplasty from March 2011 till February 2015. Diagnosis was confirmed through abdominal ultrasound and CT abdomen. Pre-operative evaluation was done to assess the fitness of the patients for general anesthesia. Patients having hypertension, diabetes mellitus and other hepatobiliary conditions like liver abscess, gall stones and obstructive jaundice were excluded. Similarly patients having hydatid cyst in the left lobe of liver or other viscera were also excluded from the study. Post-operatively, patients were observed in the ward and complications like bile leak were noted. They were followed up in OPD for one year. Data was analyzed through SPSS.**

**Results: A total of 26 patients with liver hydatid cyst underwent surgery. Male to Female ratio was 2.7:1. Mean age of the patients was 44.5 years (±12.4 SD). The average operating time was 45-90 minutes. Post operatively, 02(7.7%) patients had bile leak, 03(11.5%) had wound infection and 01(3.8%) patient developed recurrent hydatid cyst in the liver. The average hospital stay was 5.4 days. There was no post operative mortality.**

**Conclusion: Partial cystectomy and omentoplasty is an acceptable surgical procedure for hepatic hydatid disease in terms of short hospital stay and post operative morbidity.**

**Keywords: Hepatic hydatid cyst, Echinococcos Granulosis, partial cystectomy, omentoplasty**

**Hayatabad Medical Complex Peshawar**
A Hadi
S Muhammad
FO Shah

**Lady Reading Hospital, (LRH) Khyber Pakhtunkhwa, Peshawar**
SNA Shah

**Correspondence:**
Dr Ainul Hadi,
Assistant Professor,
Surgical Unit-A, Hayat Medical Complex Peshawar
Cell:0300-9055565
mail:surgeonhadi05@yahoo.com

## Introduction:

Hydatid cyst is a zoonotic parasitic infection caused by Echinococcos Granulosis. Human echinococcus is still endemic in some areas of world including North Africa, Spain and Portugal.[1] Humans are accidentally infected by ingested ova and liver is the most common site (50-70%) for hydatid cyst followed by lung, brain and other viscera.[2,3] Several types of treatments have been described to treat hydatid disease of the liver. Medical therapy alone is insufficient to cure the disease, although stabilization of disease have been reported with albendozole alone or in combination with praziquantal.[4-6] Surgery remains the main modality of treatment despite advances in medical and minimally invasive radiological therapies.[3,7] Surgical approaches varies from complete resection to minimally invasive procedures (e.g. Percutaneous aspiration of the cyst).[8,9] Despite potential high risk of recurrence, open partial cystectomy maybe a reasonable approach, presenting a good alternative in difficult cases.[8,10]

However, the residual cavity remains the main problem. Omentoplasty is one of the most widely used procedures for obliterating the residual cavity. Moreover it has been reported to reduce the postoperative complications like bile leak considerably.

The purpose of this study is to evaluate the post

*Table 1: Clinical presentation*

| Presentations | No of patinets | Percentage |
|---|---|---|
| Vague abdominal pain | 15 | 57.7% |
| Severe pain Rt hypochondrium | 03 | 11.5% |
| Dyspepsia | 06 | 23.1% |
| Nausea and vomiting | 04 | 15.4% |
| Jaundice | 03 | 11.5% |
| Mass RHC | 20 | 76.9% |
| Asymptomatic | 04 | 15.5% |

*Table 2: Post-operative complications (n=26)*

| Complications | No of patinets | Percentage |
|---|---|---|
| Bile leak | 02 | 7.7% |
| Wound infection | 03 | 11.5% |
| Recurrence | 01 | 3.8% |

operative outcomes of partial cystectomy (endocystectomy) along with omentoplasty in the management of hydatid liver disease.

**Materials and Method:**

This prospective study of four years duration was conducted at Hayatabad Medical Complex from March 2011 till February 2015. Initially, 35 patients were included but after final assessment, only 26 patients of either sex and belonging to different age groups were considered in the final study. These patients belonged to different parts of the country. Patients having hydatid cyst in the left lobe of liver, cysts involving both lobe of liver and other abdominal viscera or extra abdominal involvement were excluded from the study. Similarly, patients with previous history of abdominal surgery, other hepatobiliary conditions like infected hydatid cyst, liver abscess, gallstones and obstructive jaundice were also excluded. Cases of systemic illnesses like hypertension and diabetes mellitus, were also not considered.

All patients were evaluated clinically, biochemically and radiologically before surgical intervention. Pre-operative investigations included viral profile, full blood counts, blood sugar, blood urea, chest x-ray (P.A view), ultrasound abdomen and pelvis, CT scan abdomen and pelvis and CT thorax in selected cases. All patients were admitted one day before surgery and one unit of cross matched blood was arranged in selected cases. An informed consent was taken in all cases. One gram injection Ceftriaxone was given intravenously at the time of induction of anesthesia. Right subcostal incision was used in all cases for exposure of hydatid cyst of liver. After opening the peritoneal cavity, surgical field was covered with packs soaked in 20% hypertonic saline solution to prevent the spread of parasite and reduce the risk of intraperitoneal soiling and contamination. After cyst decompression with wide bore needle, 20% hypertonic saline was injected into the cyst and kept in for 5 minute to kill the scolices. The cyst was unroofed and the contents were evacuated with sponge holding forceps. Omentoplasty was done by placing a pedicled flap of greater omentum, fashioned on right gastroepiploic artery, to obliterate the large residual cavity in order to reduce its size and prevent its recurrence. The free pedicle is fixed to the cyst wall by two to three interrupted stitches of vicryl 2/0 to avoid its displacement. A single drain was placed in the sub hepatic space in all cases. Post operatively patients were kept nil per oral for 6 hours and injection Ceftriaxone 1gm 12 hourly given for 3-5 days. Drain was usually removed after 72 hours. Operative notes and postoperative findings were noted on a preformed proforma. Patients were sent home between 5th and 10th post operative day. Patients were advised to visit OPD at 10th post operative day to examine around and remove skin stitches. Follow up visits were scheduled at 1 month, 3 months, 6 months and one year interval after surgery. The outcome of procedure was assessed by clinical examination and imaging techniques. Three months after surgery, 85% cases had completely resolved and marked reduction in the size of residual cavity.

**Results:**

After defining the exclusion criteria, a total of 26 patients were included in the final study. Out of 26 patients 19 (73.1%) were male and 7 (26.9%) were female with male to female ratio of 2.7:1. The mean age of patient was 44.5 (± 12.4 SD). In this study, 20 (76.9%) patients had palpable mass in the right hypochondrium

and 15 (57.7%) were complaining of vague abdominal pain. 6 (23.1%) patients had dyspeptic symptoms (table-1)

Post operatively 03 (11.55) patients developed wound infection which were treated by removing the skin stitches, daily antiseptic dressing and antibiotic therapy. Only 02 (7.7%) patients had post operative leak. They were managed conservatively and settled down within 10 days. Na patients developed deep intraabdominal abscess. The hospital stay was 4-7 days (average 5.4 days). There was no mortality in this study group. Only 01 (3.8%) patient had developed recurrent hydatid cyst of the liver which was confirmed through abdominal ultrasound and CT scan abdomen.

**Discussion:**

The echinococcus is an endemic problem in some areas of the world like Africa, Middle East, Australia, New Zealand,[1,11] but its frequency tends to decrease with the improvement of sanitary conditions and the development of effective management procedures.[12,13]

Most of the patients with hydatid disease of the liver are presenting with vague abdominal pain and dyspeptic symptoms but many of them will be asymptomatic.[8,14] In the current series of 26 cases, 76.9% patients presented with a mass in the right hypochondrium and 57.7% had vague abdominal discomfort. Only 06 (23.1%) cases had dyspepsia and indigestion. These figures are comparable to those presented by Murtaza B et al in his study of 23 cases.[8] Malik A.A. et al also reported similar findings in his study of 65 cases. In the current study, the main diagnostic modalities employed were abdominal ultrasound and CT scan abdomen and pelvis in all cases and had diagnostic accuracy of 100%. In literature the reported diagnostic sensitivity of ultrasound and CT scan is 96-96% and 100% respectively.[8,10] Similarly, Mohan SVS et al reported a diagnostic accuracy of 90% and 100% for ultrasound an CT scan respectively.[9,16] Sayek and his colleagues also used ultrasound abdomen and CT scan abdomen to confirm their diagnosis of hydatid cyst.[15] MRI is also useful in the diagnosis of hydatid disease particularly in the absence of characteristic appearance on ultrasound and CT scan and in cases of extra hepatic cysts or when serological tests are negative.[2,16,17]

The treatment modality of hydatid disease should be selected for each patient individually according to patient preference, age, pregnancy and concomitant disease. These patient related factors affect the treatment plan and also pose a risk for surgical intervention.[4,18] Surgery remains the principle treatment modality and is recommended for both symptomatic and asymptomatic patients.[19-21] It ranges from classical conservative procedure like partial cystectomy (endocystectomy) followed by management of the residual cavity to radical procedures such as pericystectomy or liver resection.[1,8-10] However, medical therapy with aniti-helminthics is indicated in small hepatic hydatid cysts of less than 4cms in size, multiple cysts in the liver and mostly as an adjuvant to surgical treatment.[22] In case of single cyst more than 5cm in diameter and positive serological test, surgical intervention is mandatory.[1,8,14]

No single procedure can be recommended for the surgical management of hepatic hydatid cyst but the choice of surgical intervention must be made according to the size, location and complication of cyst.[4,18]

Omentoplasty is one of the procedures for the obliteration of residual cavity after partial cystectomy. Omentoplasty has been widely used as a method of dealing with the residual cavity but remains controversial.[1,8,11] It is a simple procedure and is usually followed by low postoperative complications, morbidity and mortality. The incidence of such postoperative complications like hematoma formation, abscess, biliary leakage and persistence of residual cavity has markedly decrease with the introduction of using greater omentum in the obliteration of cavity. This has been confirmed by our current study. We had only 7.7% post operative bile leaks which were managed conservatively. This figure is slightly higher than 4.3% reported by Murtaza B et al.[8] Similarly, Malik A.A et al re-

ported a low leak rate of 5.6% in his study of 56 cases[9] but Mouaqit O et al recorded a leak rate upto 14.3% in this series.[23] Similarly wound infections reported in other studies included 7.2% by Mouaqit O et al,[23] 13.3% by Mousavi SR et al[24] and up to 16.7% reported by Malik AA et al.[23]

Hospital stay was 4-7 days (average 5.4 days) which is comparable to 7.4 days by Akkucuk S et al.[1] One patient developed recurrent cyst in liver. In literature, the recurrence rate reported is about 1-25%[5,25-27] which may be attributed to incomplete removal, spillage or growth of small occult cysts that were missed initially.

Radical surgery, pericystectomy or liver resection has lower risk of recurrence than conservative procedures (partial cystectomy, unroofing, capitonnage, omentoplasty).[1,8] There was no mortality. The reported mortality rate is upto 3.4% after surgical treatment.[1]

Morbidity and mortality are remarkably higher with radical procedures than conservative surgical approaches.[1] Most of the reported deaths are related to patient condition, postoperative septic complications (e.g. abscesses in the remaining cyst cavity) and anaphylaxis due to cyst perforation.[28]

**Conclusion:**

Partial cystectomy and omentoplasty is an acceptable surgical procedure for hydatid disease of the liver in terms of low post-operative complications and short hospital stay.

**Conflict of Interest**: None

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**Role and contribution of authors:**

Dr. Ainul Hadi, Assistant Professor, critically review the introduction, methodology, results and conclusions.

Dr. Syed Nadeem Ali Shah, Assistant Professor, gave the final touchups to the article and improved the discussion and conclusion.

Dr. Saadia Muhammad, P.G trainee Surgical A Unit, collected the data and wrote the initial writeup

Dr. Farrukh Ozair Shah, Senior Registrar Surgical A Unit, collected the data and helped in introduciotn, methodology and discussion writing.

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